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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/814,296	04/01/2004	Tomofumi Miyamoto	008312-0309052	6129

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EXAMINER

LEE, PING

ART UNIT	PAPER NUMBER
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2614

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/814,296	Applicant(s) MIYAMOTO, TOMOFUMI	
	Examiner Ping Lee	Art Unit 2614	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 March 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 4-7 and 9-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 4-7, 9-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
2. Claims 4-6, 9-12, 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Freadman (hereafter Freadman '942) (US005818942A) in view of Virva (US 4,164,988).

Regarding claim 4, Freadman '942 discloses an electronic apparatus comprising:
a casing (12) defining a closed space and containing electronic components in the space (as shown in Fig. 1, speakers are contained in the space defined by element 12; although not explicitly shown, wiring is inherently included in the space; Fig. 2 is a modification of Fig. 1; the unit 20 as shown in Fig. 2 replaces the genera speakers 10 in Fig. 1; col. 2, lines 18-19; therefore unit 20 as shown in Fig. 2 is a part enclosed by the casing 12 shown in Fig. 1); and

a pair of speaker units, left and right (as shown in Fig. 2), located in the casing, each of the speaker units including a cabinet (22 and 24), a speaker (10) arranged in the cabinet (22 and 24) and exposed to the outside of the cabinet, a port (end of 32) which is defined in the cabinet to directly open to the closed space of the casing (30 is a part of the closed space of the casing 12) and through which a sound emitted from the backside of the speaker (10) into the cabinet (22 and 24) is radiated outward from the cabinet (22 and 24) and into the space of the casing (30 as a part of the space of the casing 12), and a duct (32) which is arranged in the cabinet (22 and

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24) and defines a passage that communicates the rear of the speaker with the port (the end of 32),

the speaker (10) being located in the cabinet (22 and 24) so as to be exposed to the outside of the casing through the opening of the casing and the protrusion, and the casing (12) having openings (28a) through which sounds emitted from the ports of the speaker units into the space of the casing (30 is a part of the space of the casing 12) and synthesized together in the space of the casing (30 is a part of the space of the casing 12) are radiated to the outside of the casing.

Freadman '942 shows the cabinet of each speaker unit having a top face in contact with an inner surface of an outside wall of the casing (the surface pointed by 12), but fails to show a protrusion which protrudes from the top face and passes through an opening defined in the outside wall of the casing. Fig. 2 of Freadman '942 shows a speaker (10) having a dimension defined by the oval (as pointed by 10). Freadman '942 does not specify whether the oval is being on the same level, above or below with respect the top face. Therefore, one skilled in the art would have expected that the performance of the speaker would not be altered significantly if the outer rim of the oval is being protruded from the top face. Examiner takes Official Notice that this feature is notoriously well known in the art.

Thus, it would have been obvious to one of ordinary skill in the art to modify Freadman '942 by mounting the speaker above the top face of the cabinet because it was considered as a matter of design preference on how to mount the speaker on the cabinet.

Freadman '942 also fails to show that the duct defines a tortuous passage. Nevertheless, Freadman '942 teaches that the port is bass port (col. 1, lines 40 and 42; col. 2, lines 32 and 37). Although not explicitly stated, one skilled in the art would have recognized that the duct used in Freadman '942 is to enhance the bass frequency, and the design was commonly known as bass reflex. Virva is cited here to provide supplementary teaching on bass reflex. From col. 1, line 60 through col. 2, line 5, the function of a bass reflex tube has been explained. In order for the tube to be functioned properly (i.e. to enhance bass, not to cancel the bass), Virva teaches that the length of the tube coupled to the back of the speaker is critical. Furthermore, Virva teaches several embodiments showing various designs on the tube coupled to the back of the speaker. They include straight tubes and tortuous passages. So one skilled in the art, after reading Virva, would have concluded that whether the tube is straight or tortuous is irrelevant, the most essential point is the total length that acoustic sound wave traveling in the tube from the back of the speaker to the port, so the bass from the port would be enhanced when it is combined with the front wave. Virva suggests using tortuous passage to make a compact housing (see Figs. 5 and 6). As mentioned in Freadman '942, one has to use a compact speaker housing for a computer (col. 1, lines 31-33) due to the overall size of the keyboard. Thus, it would have been obvious to one of ordinary skill in the art to modify Freadman '942 in view of Virva by replacing the straight tube with a tortuous one in order to have a correct length for the back wave to be traveled to the port without occupying too much precious space inside a laptop.

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Regarding claim 5, although not explicitly discussed, the cabinets inherently having different capacities in nature since it would have been nearly impossible to produce two cabinets in exact size. From a different point of view, the bass reflex speaker requires the back wave and the front wave to be in phase. This, well known to those skilled in the art, requires the port, the duct and the capacity of the speaker cabinet be tuned to maintain this relationship (Virva also discusses the tuning). Since no two speakers are being exactly the same in term of physical size and frequency response, so the speaker cabinets have to be adjusted separately and individually. Examiner takes Official Notice that tuning the speaker cabinet is notoriously well known in the art. Thus, it would have been obvious to one of ordinary skill in the art to modify Freadman '942 by adjusting the cabinets' sizes based on individual speakers in order to properly match the front wave and the back wave.

Regarding claim 6, as shown in Fig. 2, the respective ports are opposed to each other.

Regarding claim 9, Freadman '942 shows the display unit (40) and keyboard (14a).

Regarding claim 10, Freadman '942 shows the ducts (32).

Regarding claims 11 and 12, Freadman '942 fails to show the screw for mounting the speaker unit. Examiner takes Official Notice that this feature is notoriously well known in the art. Thus, it would have been obvious to one of ordinary skill in the art to modify Freadman '942 and Virva by securing the speaker units using screw because it

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was a matter of engineering design choice on how to mount the speaker units to the casing.

Regarding claim 16 and 17, Freadman '942 fails to show the partition walls and the protective nets. Freadman '942 teaches the general concept of the mixing the back waves from left and right speakers of a computer to align with front wave, one skilled in the art would have expected that the exact layout and/or design of the casing, such as having partition walls extending from a top surface of the casing which surround the openings, would not alter the expected response from the speaker units as long as the partition walls do not alter length of the front and back signal paths and changing the intending frequency response. Having walls surrounding the opening would protect the speaker from intrusion from the side. Having protective nets would protect the speaker from intrusion from the top. Examiner takes Official Notice that these features are notoriously well known in the art. Thus, it would have been obvious to one of ordinary skill in the art to modify Freadman '942 and Virva by having additional protective features, such as surrounding walls and protective nets, in order to protect the speaker units from being damaged from unexpected force.

3. Claims 7, 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Freadman '942 and Virva as applied to claim 4 above, and further in view of Freadman '708.

Regarding claims 14 and 15, Freadman '942 in view of Virva as discussed above teaches an electronic apparatus comprising:

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a casing (12) defining a closed space and containing electronic components in the space (enclosed by 12) (as shown in Fig. 1, speakers are contained in the space; although not explicitly shown, wiring is inherently in the space; Fig. 2 is a modification of Fig. 1; the unit 20 as shown in Fig. 2 replaces the general speakers 10 in Fig. 1; col. 2, lines 18-19; so the unit 20 is a part enclosed by the casing); and

a pair of speaker units, left and right (Fig. 2), located in the space of the casing (at 20; the volume defined in 20 is a part of the space defined by casing 12 as shown more clearly in Fig. 1),

each of the speaker units including a cabinet (22), a speaker (10) arranged in the cabinet and exposed to the outside of the cabinet, a port (at the end of 32) which is defined in the cabinet to directly open to the closed space of the casing and through which a sound emitted from the backside of the speaker into the cabinet is radiated outward from the cabinet and into the space of casing (at 30; the volume defined in 30 is a part of the space defined by casing 12 as shown more clearly in Fig. 1), and a duct which is arranged in the cabinet and defines tortuous passage that communicates the rear of the speaker (10) with the port (end of 32),

the speaker (10) having a portion exposed to the outside of the casing through an opening (34) defined in an outside wall of the casing, and the casing having openings (28a) through which sounds emitted from the ports (end of 32) of the speaker units into the casing and synthesized together in the casing are radiated to the outside of the casing.

Freadman '942 fails to show the casing being a laptop computer and the ports being oriented toward the front wall of the laptop computer, but shows that the speaker units are being positioned at left and right corners of a top wall of the casing, respectively, and the speakers are being oriented towards the top wall of the casing. In a similar design, Freadman '708 teaches that a laptop computer could use better designed built-in speaker housing for generating better sound quality for multiple media application (col. 1). The ports in Freadman '708 are directed toward the front wall of the laptop computer. The casing (12) has openings (22) through which back wave sounds are emitted. As taught in Freadman '708, the ports could be directed to any preferred directions (col. 4, lines 12-19). Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention was made with all three references before him/her to utilize the stereophonic speaker units as taught in Freadman '942 for laptop computer and placing the ports directed toward a preferred direction, such as toward the front wall of the casing in order to improve the sound quality from the laptop computer.

Regarding claim 7, Freadman '942 fails to show that the ports are oriented to the same direction. In the same field of endeavor, Freadman '708 teaches the ports could be directed any preferred directions (col. 4, lines 12-19). Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention was made with three references before him/her to adjust the orientation of the ports in Freadman '942, such as oriented to the same direction because it was considered as a matter of preference.

Response to Arguments

4. Applicant's arguments with respect to claims 4, 14 and 15 have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ping Lee whose telephone number is 571-272-7522.

The examiner can normally be reached on Wednesday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian C. Chin can be reached on 571-272-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Ping Lee/
Primary Examiner, Art Unit 2614

pwl